

A Step-by-Step Guide to Synchronous Volume Replication (Block Based) over a WAN with Open-E® DSS™



Synchronous **Volume Replication** over a WAN

	Replication Mode		Source/Destination			Data Transfer		Volume Type			
	Synchronous	Asynchronous	w/ System	LAN	WAN	File based	Block based	NAS	iSCSI		FC
									File-IO	Block-IO	
Synchronous Volume Replication over a WAN	✓				✓		✓	✓	✓	✓	✓

Synchronous Volume Replication over WAN is block based and supports iSCSI, FC and NAS logical volumes. It provides data availability in case of source system disaster.

REPLICATION BETWEEN TWO SYSTEMS OVER A WAN

■ **Recommended Resources**

- Key Hardware (two systems)
 - ✓ x86 compatible,
 - ✓ RAID Controller,
 - ✓ HDD's,
 - ✓ Network Interface Cards.
- Software
 - ✓ Open-E DSS, 2 units.

■ **Benefits**

- Data redundancy
- Maximum data safety

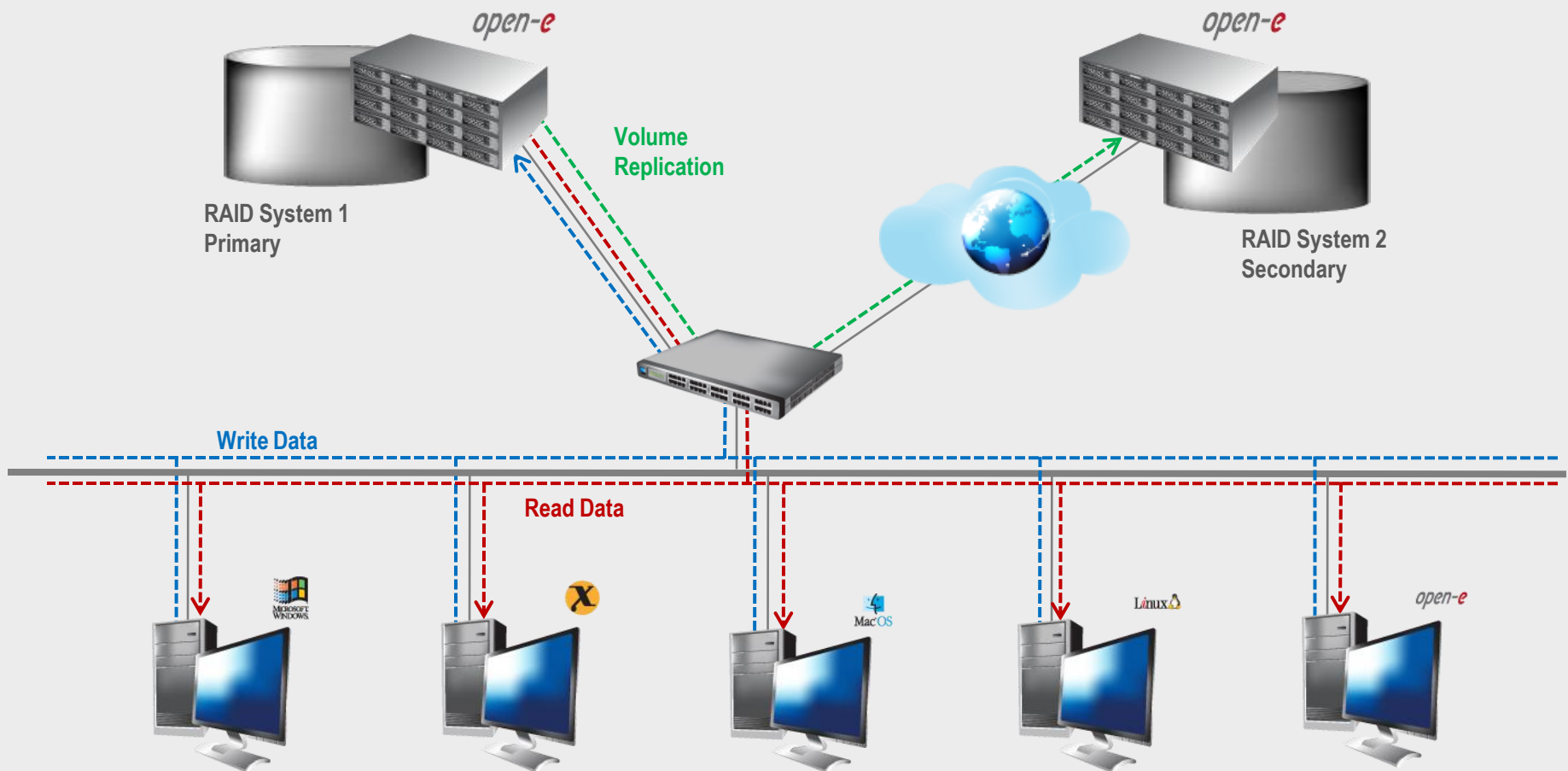
■ **Disadvantages**

- High cost of WAN solution

Synchronous Volume Replication over a WAN

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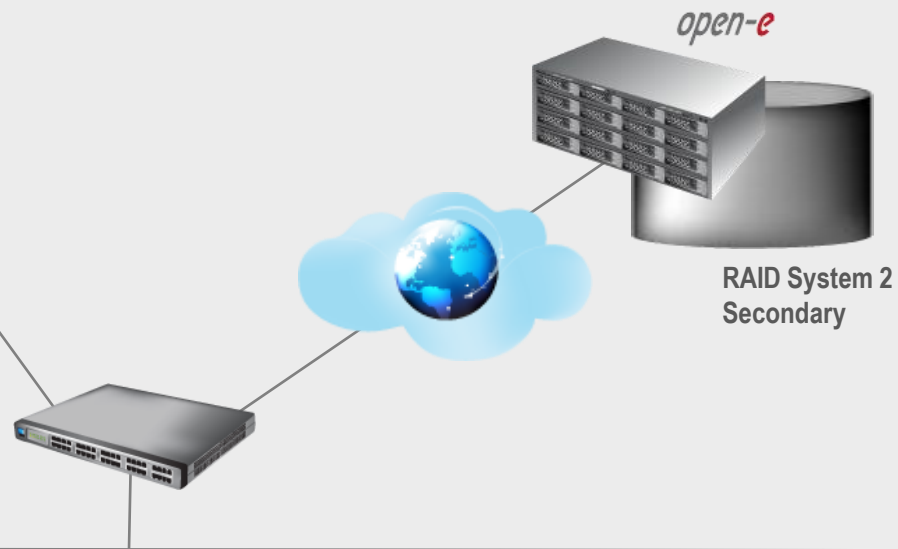
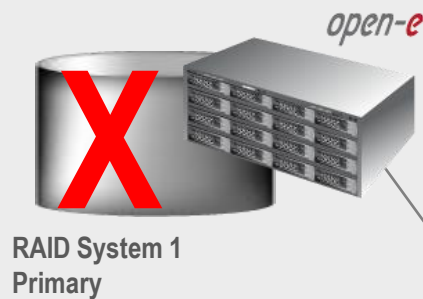
- Data is written and read to System 1
- Data is continually replicated to System 2 via Internet connection



Synchronous Volume Replication over a WAN

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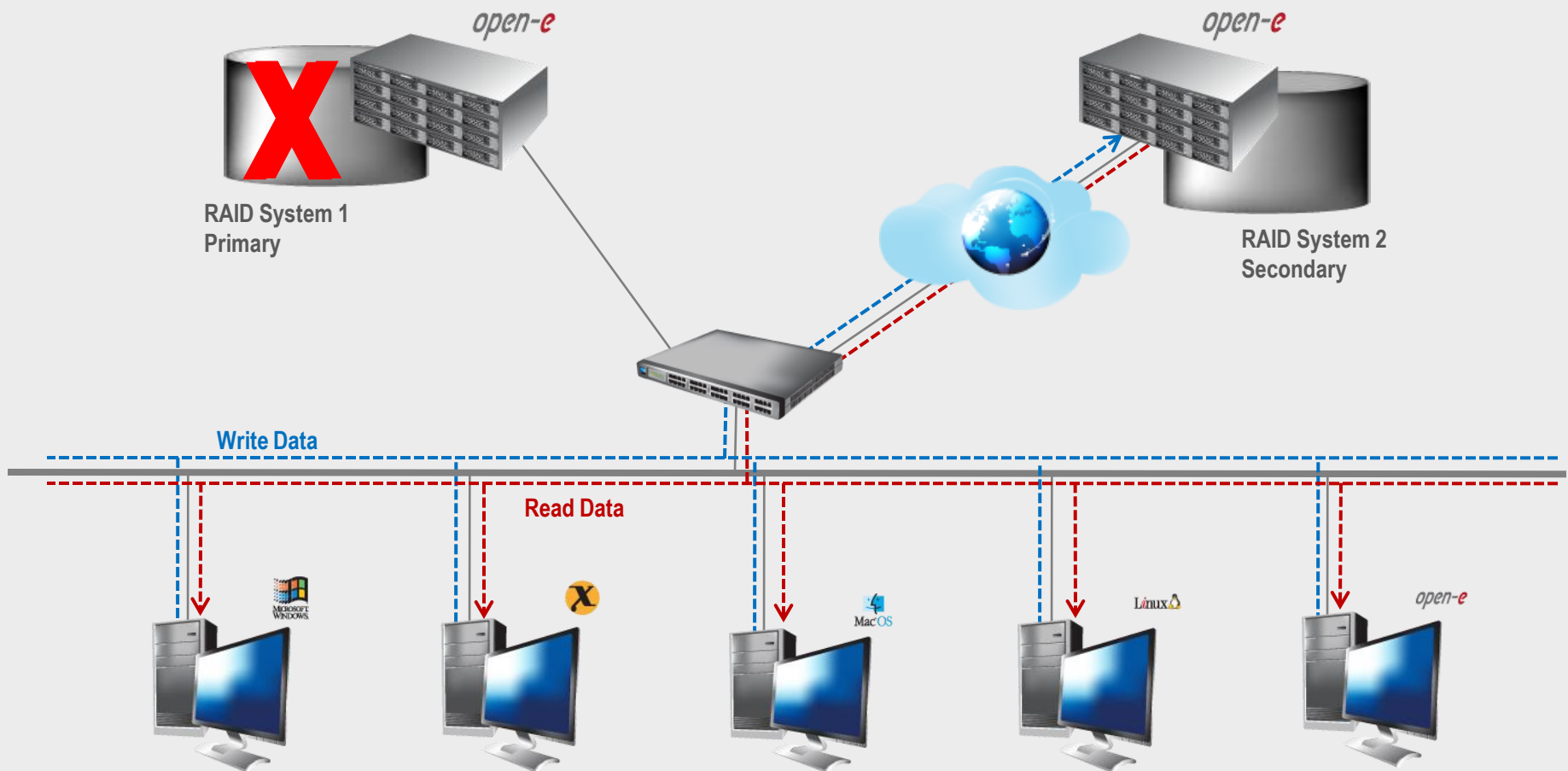
- In case of raid array error or disk drive error in the System 1, the server will send an e-mail notification to the administrator,
- In the case of a failure of system 1, users will be notified,
- Administrator then switches users to the System 2 over the WAN.



Synchronous Volume Replication over a WAN

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- After switching, replicated volume will be available on System 2



Setting up Synchronous **Volume Replication** over a WAN *open-e*

TO SET UP VOLUME REPLICATION, PERFORM THE FOLLOWING STEPS:

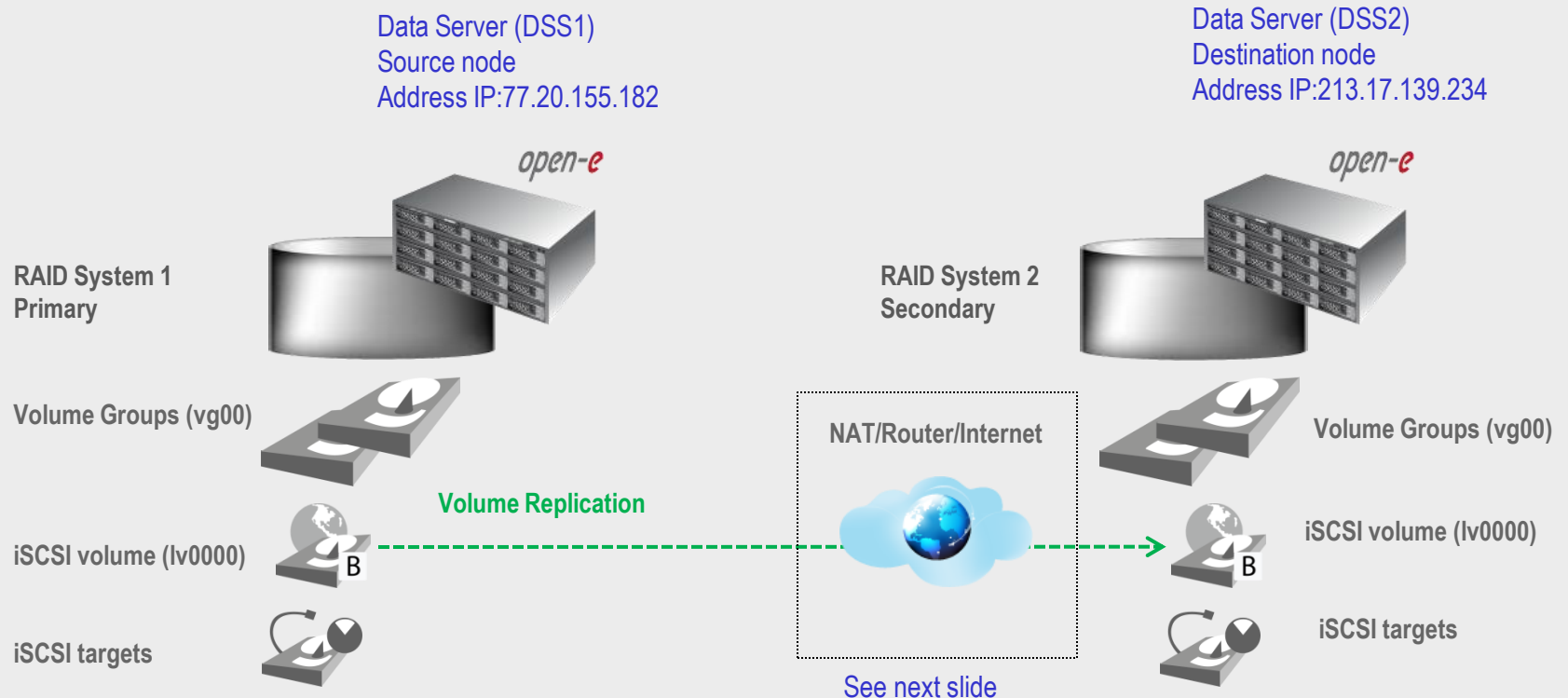
1. Hardware configuration
2. Configure DSS1 and DSS2 on the WAN
3. Configure the destination node
4. Configure the source node
5. Create the replication task
6. Check status of volume replication

Setting up Synchronous **Volume Replication** over a WAN *open-e*

Hardware Requirements

To run the Volume replication of Open-E DSS, a minimum of two systems are required. Both servers are working in the Wide Area Network. An example configuration is shown below:

1. Hardware Configuration



Setting up Synchronous **Volume Replication** over a WAN *open-e*

2. Configure DSS1 and DSS2 on the WAN

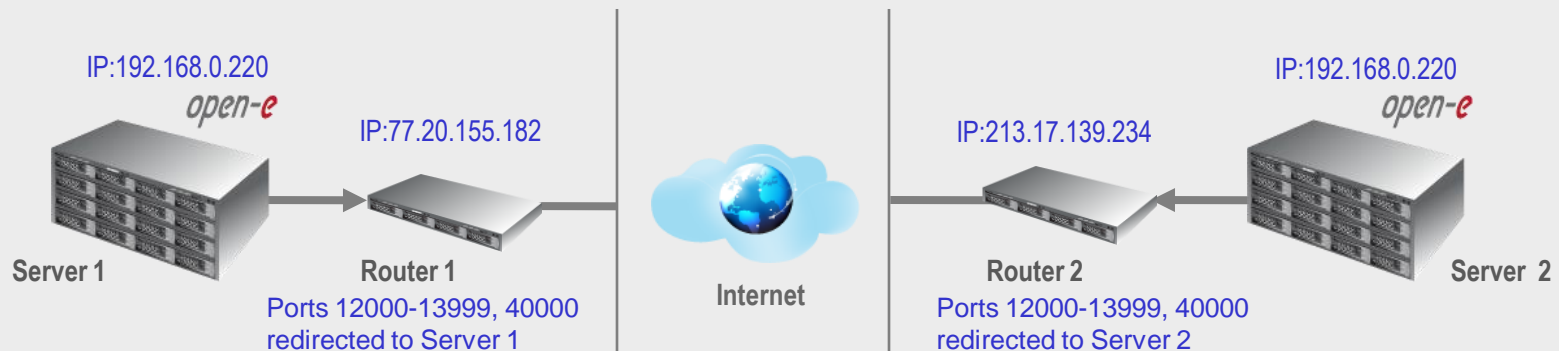
BELOW YOU CAN FIND OF SETTING THE DSS1 AND DSS2 ON THE WAN:

DSS 1 - machine behind the NAT with local IP address,

DSS 2 – Data Storage System with external internet IP address router/firewall

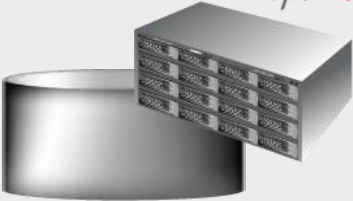
Please perform the following steps to set up of Synchronous Volume Replication on routers:

- on **Router 1** redirect ports 12000-13999 and 40000 to **Server 1**,
- on **Router 2** redirect ports 12000-13999 and 40000 to **Server 2**.



Setting up Synchronous Volume Replication over a WAN *open-e*

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Data Server (DSS2)
Destination node
Address IP:213.17.139.234

3. Configure the Destination Node

Under the „CONFIGURATION” tab, select „volume manager”.

Volume Groups (vg00)



Add the selected physical units (Unit S000) to create a new volume group (in this case, vg00) and click **apply** button.

DSS DATA STORAGE SERVER *open-e*

logout | **SETUP** | **CONFIGURATION** | MAINTENANCE | STATUS | HELP

volume manager | NAS settings | NAS resources | iSCSI target manager | FC target manager

Vol. groups

Unit rescan

rescan

Unit manager

✓	Unit	Size (GB)	Serial number	Status
<input checked="" type="checkbox"/>	Unit S000	372.61	3NF0N4HX	available

Action: new volume group

Name: vg00

apply

Drive identifier

✓	Unit	Serial number	Status
<input type="checkbox"/>	Unit S000	3NF0N4HX	

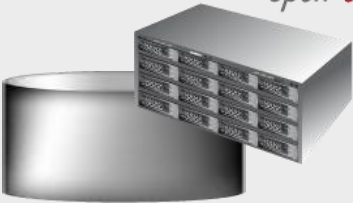
apply

Event Viewer:

Data Storage Server. All rights reserved

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Data Server (DSS2)
Destination node
Address IP:213.17.139.234

3. Configure the Destination Node

Select the appropriate volume group (**vg00**) from the list on the left and create a **new iSCSI volume** of the required size. This logical volume will be the destination of the replication process.

iSCSI volume (lv0000)



Next check box with **Use volume replication**

After assigning an appropriate amount of space for the iSCSI volume, click the **apply** button

DSS DATA STORAGE SERVER *open-e*

logout | **CONFIGURATION** | MAINTENANCE | STATUS | HELP

volume manager | NAS settings | NAS resources | iSCSI target manager | FC target manager

Vol. groups

- vg00

Vol. replication

Volume group: vg00

Volume manager

System volumes	Size (GB)
Reserved Pool	4.00
Reserved for snapshots	0.00
Reserved for system	1.00
Reserved for replication	0.00
Free	367.56

Action: new iSCSI volume

Options: Just create volume

☒ Use volume replication

☐ File I/O

☒ Initialize

☒ Block I/O

0 367.56

add: 10.00 GB (+0.12 GB for replication)

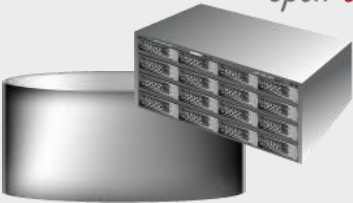
apply

Event Viewer:

Data Storage Server. All rights reserved

Setting up Synchronous Volume Replication over a WAN *open-e*

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Data Server (DSS2)
Destination node
Address IP:213.17.139.234

3. Configure the Destination Node

iSCSI volume (lv0000)



The destination iSCSI Volume
Block I/O is now configured.

logout **DSS** DATA STORAGE SERVER *open-e*

SETUP **CONFIGURATION** MAINTENANCE STATUS HELP

volume manager NAS settings NAS resources iSCSI target manager FC target manager

Vol. groups ?

- vg00

Vol. replication ?

Volume group: vg00

? Volume manager

Info
Logical volume lv0000 has been created successfully.

Logical Volume	Type	Snap.	Rep.	Init.	Blocksize (bytes)	Size (GB)
lv0000	B		✓		N/A	10.00
System volumes						Size (GB)
Reserved Pool						4.00
Reserved for snapshots						0.00
Reserved for system						1.00
Reserved for replication						0.13
Free						357.44

Action: new NAS volume

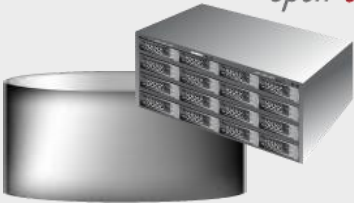
☐ Use volume replication
☐ WORM

Event Viewer:

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Data Server (DSS2)
Destination node
Address IP:213.17.139.234

3. Configure the Destination Node

Under the „CONFIGURATION” tab, select „iSCSI target manager”.

iSCSI targets

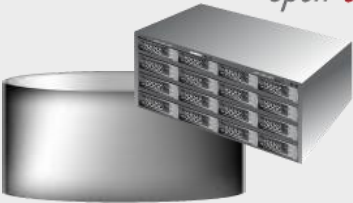


In the **Create new target** function enter a name for the new target (as desired) in the Name field and click **apply** to confirm.

The screenshot shows the DSS (Data Storage Server) web interface. The top navigation bar includes 'logout', 'DSS', and 'DATA STORAGE SERVER'. Below this is a secondary navigation bar with tabs: 'SETUP', 'CONFIGURATION' (selected), 'MAINTENANCE', 'STATUS', and 'HELP'. Under the 'CONFIGURATION' tab, there are sub-tabs: 'volume manager', 'NAS settings', 'NAS resources', 'iSCSI target manager' (selected), and 'FC target manager'. The main content area is divided into two sections: 'Targets' and 'CHAP users'. The 'Targets' section has a '+ ?' icon and a 'Create new target' button. The 'CHAP users' section has a '+ ?' icon and a 'CHAP user target access' button. The 'Create new target' form includes a 'Name' field with the value 'iqn.2009-02:dss2.target0', an 'Alias' field with the value 'target0', and an 'apply' button. The 'CHAP user target access' form includes a checkbox for 'Enable CHAP user access authentication' and an 'apply' button. The footer of the interface says 'Data Storage Server. All rights reserved'.

Setting up Synchronous Volume Replication over a WAN *open-e*

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Data Server (DSS2)
Destination node
Address IP:213.17.139.234

3. Configure the Destination Node

Select target0 within the Targets field.

iSCSI targets



To assign a volume to the target, click the button  located under **Action**

DSS DATA STORAGE SERVER *open-e*

logout | SETUP | **CONFIGURATION** | MAINTENANCE | STATUS | HELP

volume manager | NAS settings | NAS resources | **iSCSI target manager** | FC target manager



Targets

target0

Target: iqn.2009-02:dss2.target0

Target volume manager

Info
Currently there are no LUN's added to this target. In order to add a LUN, click on the green plus "+" sign in the "Action" column for this LUN.

Volume	SCSI ID	LUN	RO	WB	Action
lv0000	93YaEWZgg17Hoa4a	0	<input type="checkbox"/>	<input type="checkbox"/>	 

CHAP users

CHAP user target access

☐ Enable CHAP user access authentication

Target IP access

Deny access:

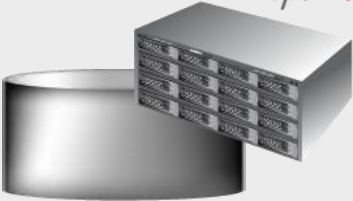
apply

Event Viewer:

Data Storage Server. All rights reserved

Setting up Synchronous **Volume Replication** over a WAN *open-e*

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Data Server (DSS2)
Destination node
Address IP:213.17.139.234

3. Configure the Destination Node

Under the „**CONFIGURATION**“ tab, select „**volume manager**“. Select the **Vol. Replication**. Check box under **Destination** and click the **apply** button.

Volume Replication



Next, under **Mirror Server IP** function, enter the IP address of the source node. In our example, this would be 77.20.155.182. Next check the **WAN** box and enter a unique combination of 6 to 12 characters in the **ReplicationID** field and click the **apply** button.

The screenshot shows the 'DSS DATA STORAGE SERVER' web interface. The 'CONFIGURATION' tab is selected, and the 'volume manager' sub-tab is active. In the 'Vol. groups' section, 'vg00' is listed. In the 'Vol. replication' section, the 'Volume replication mode' table shows 'lv0000' with 'Init' status 'done', 'Source' unchecked, and 'Destination' checked. Below this, the 'Mirror server IP' section has 'IP address' set to '77.20.155.182', 'WAN' checked, and 'ReplicationID' set to '193WERacvQ'. An 'Info' message at the bottom states 'Mirror Server IP is not set.'.

Logical Volume	Init	Source	Destination	Clear metadata
lv0000	done	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

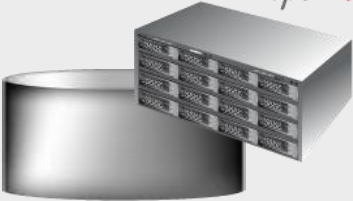
IP address: 77.20.155.182
WAN: ☒
ReplicationID: 193WERacvQ

Info
Mirror Server IP is not set.

The configuration of the Destination Node (storage server) is now complete.

Setting up Synchronous Volume Replication over a WAN *open-e*

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Data Server (DSS1)
Source node
Address IP:77.20.155.182

4. Configure the Source Node

Under the **CONFIGURATION** tab, select **volume manager**..

Volume Groups (vg00)



Add the selected physical units (Unit S000) to create a **new volume group** (in this case, vg00) and click **apply** button.

DSS DATA STORAGE SERVER *open-e*

logout | **CONFIGURATION** | SETUP | MAINTENANCE | STATUS | HELP

volume manager | NAS settings | NAS resources | iSCSI target manager | FC target manager

Vol. groups

Unit rescan

rescan

Unit manager

Unit	Size (GB)	Serial number	Status
Unit S000	5588.27	98DC03C1	available

Action: new volume group

Name: vg00

apply

Vol. replication

Drive identifier

Unit	Serial number	Status
Unit S000	98DC03C1	

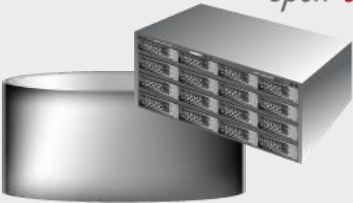
apply

Event Viewer:

Data Storage Server. All rights reserved

Setting up Synchronous Volume Replication over a WAN *open-e*

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Data Server (DSS1)
Source node
Address IP:77.20.155.182

4. Configure the Source Node

Select the appropriate volume group (**vg00**) from the list on the left and create a **new iSCSI volume** of the required size. This logical volume will be the destination of the replication process.

iSCSI volume (lv0000)



Next check box with **Use volume replication**
After assigning an appropriate amount of space for the iSCSI volume, click the **apply** button.

DSS DATA STORAGE SERVER *open-e*

logout | SETUP | **CONFIGURATION** | MAINTENANCE | STATUS | HELP

volume manager | NAS settings | NAS resources | iSCSI target manager | FC target manager

Vol. groups

- vg00

Vol. replication

Volume group: vg00

Volume manager

System volumes	Size (GB)
Reserved Pool	4.00
Reserved for snapshots	0.00
Reserved for system	1.00
Reserved for replication	0.00
Free	5583.22

Action: new iSCSI volume

Options: Just create volume

☒ Use volume replication

☐ File I/O

☒ Initialize

☒ Block I/O

0 5583.22

add: 10.00 GB (+0.12 GB for replication)

apply

Event Viewer:

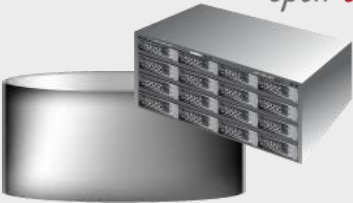
Data Storage Server. All rights reserved

NOTE:

The source and destination volumes must be exact same size. Remember to enable Volume Replication

Setting up Synchronous Volume Replication over a WAN *open-e*

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Data Server (DSS1)
Source node
Address IP:77.20.155.182

4. Configure the Source Node

iSCSI volume (lv0000)



The destination iSCSI Volume Block I/O is now configured.

DSS DATA STORAGE SERVER *open-e*

logout | **CONFIGURATION** | MAINTENANCE | STATUS | HELP

volume manager | NAS settings | NAS resources | iSCSI target manager | FC target manager

Vol. groups

- vg00

Vol. replication

Volume group: vg00

Volume manager

Info
Logical volume lv0000 has been created successfully.

Logical Volume	Type	Snap.	Rep.	Init.	Blocksize (bytes)	Size (GB)
lv0000	B		✓		N/A	10.00
System volumes						Size (GB)
Reserved Pool						4.00
Reserved for snapshots						0.00
Reserved for system						1.00
Reserved for replication						0.13
Free						5573.09

Action: new NAS volume

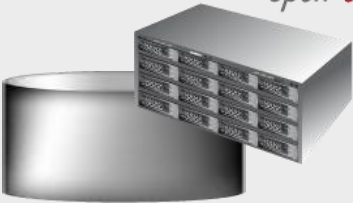
☐ Use volume replication
☐ WORM

Event Viewer:

Data Storage Server. All rights reserved

Setting up Synchronous **Volume Replication** over a WAN *open-e*

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Data Server (DSS1)
Source node
Address IP:77.20.155.182

4. Configure the Source Node

Under the „CONFIGURATION” tab, select „iSCSI target manager”.

iSCSI targets

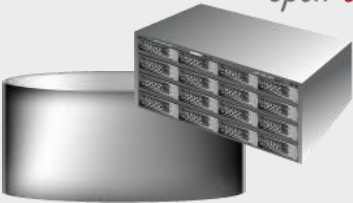


In the **Create new target** function enter a name for the new target (as desired) in the Name field and click **apply** to confirm.

The screenshot shows the open-e Data Storage Server (DSS) web interface. The top navigation bar includes 'logout', 'DSS', and 'DATA STORAGE SERVER'. Below this is a secondary navigation bar with tabs: 'SETUP', 'CONFIGURATION' (highlighted), 'MAINTENANCE', 'STATUS', and 'HELP'. Under the 'CONFIGURATION' tab, there are sub-tabs: 'volume manager', 'NAS settings', 'NAS resources', 'iSCSI target manager' (highlighted), and 'FC target manager'. The main content area is divided into two sections. The top section is titled 'Targets' and contains a 'Create new target' form. The form has a checkbox for 'Target Default Name' which is checked. Below this are two input fields: 'Name:' with the value 'iqn.2009-02:dss241.target0' and 'Alias:' with the value 'target0'. An 'apply' button is at the bottom right of this section. The bottom section is titled 'CHAP users' and contains a checkbox for 'Enable CHAP user access authentication' which is unchecked. An 'apply' button is at the bottom right of this section. At the bottom of the interface, there is an 'Event Viewer' field and a footer that reads 'Data Storage Server. All rights reserved'.

Setting up Synchronous Volume Replication over a WAN *open-e*

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Data Server (DSS1)
Source node
Address IP:77.20.155.182

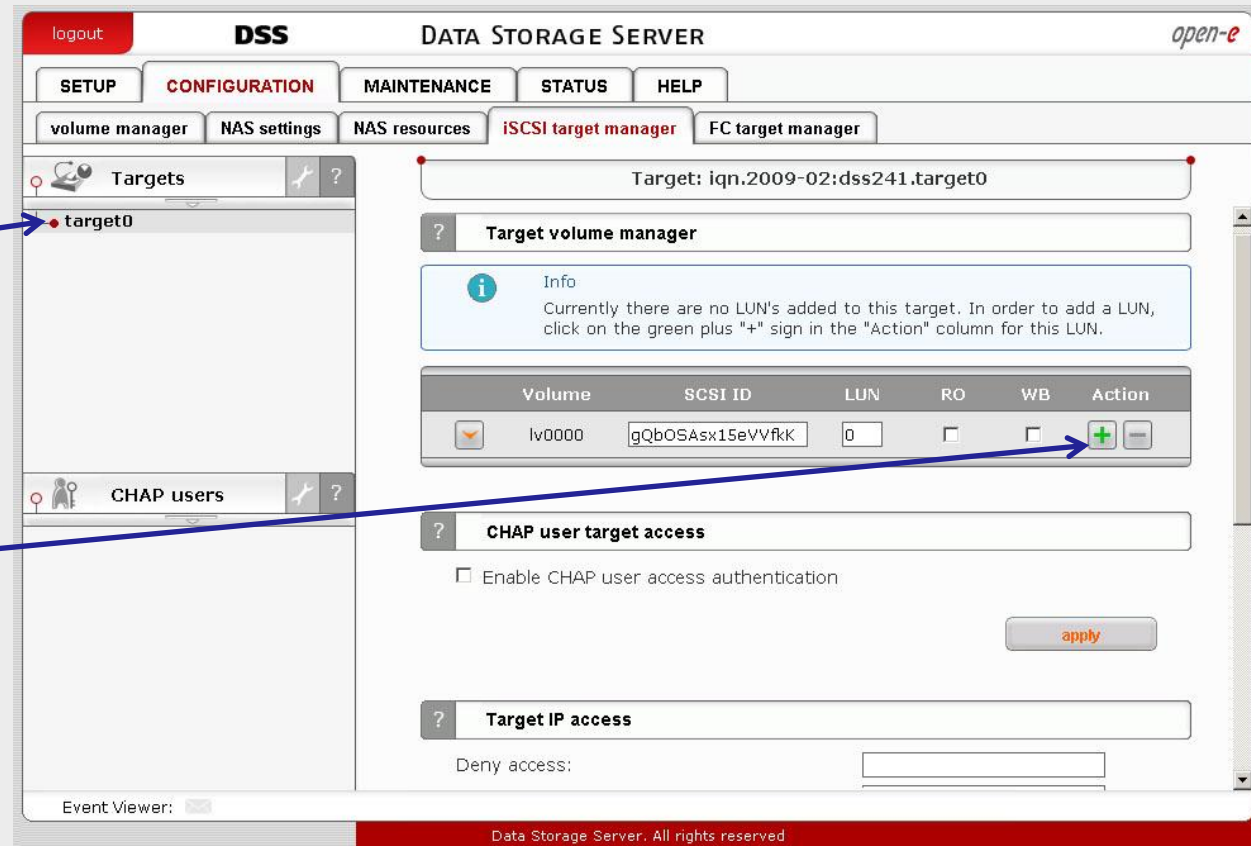
4. Configure the Source Node

Select target0 within the Targets field.

iSCSI targets



To assign a volume to the target, click the button  located under **Action**



logout **DSS** DATA STORAGE SERVER *open-e*

SETUP **CONFIGURATION** MAINTENANCE STATUS HELP

volume manager NAS settings NAS resources **iSCSI target manager** FC target manager

Targets ?



target0

Target: iqn.2009-02:dss241.target0

Target volume manager

Info

Currently there are no LUN's added to this target. In order to add a LUN, click on the green plus "+" sign in the "Action" column for this LUN.

Volume	SCSI ID	LUN	RO	WB	Action
lv0000	gQbOSAsx15eVVfkK	0	<input type="checkbox"/>	<input type="checkbox"/>	 

CHAP users ?

CHAP user target access

☐ Enable CHAP user access authentication

apply

Target IP access

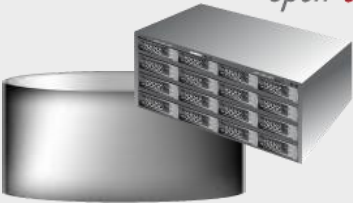
Deny access:

Event Viewer:

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Setting up Synchronous Volume Replication over a WAN *open-e*

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Data Server (DSS1)
Source node
Address IP:77.20.155.182

4. Configure the Source Node

iSCSI targets



The source iSCSI target is now configured.

logout **DSS** DATA STORAGE SERVER *open-e*

SETUP **CONFIGURATION** MAINTENANCE STATUS HELP

volume manager NAS settings NAS resources **iSCSI target manager** FC target manager

Targets ?

target0

Target: iqn.2009-02:dss241.target0

Target volume manager

Volume	SCSI ID	LUN	RO	WB	Action
lv0000	gQbOSAsx15eVVfK	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="+"/> <input type="button" value="-"/>

Volume replication: Source
Size (GB): 10.00

CHAP users ?

CHAP user target access

☐ Enable CHAP user access authentication

Target IP access

Deny access:

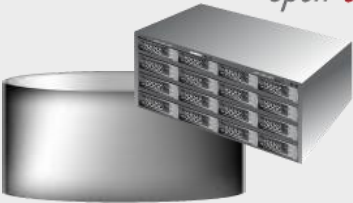
Allow access:

Event Viewer:

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Setting up Synchronous Volume Replication over a WAN *open-e*

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Data Server (DSS1)
Source node
Address IP: 77.20.155.182

4. Configure the Source Node

Now, select the **Vol. replication** and check the box under **Source** and click the **apply** button.

Volume Replication



Next, under **Mirror Server IP** function, enter the IP address of the destination node. In our example, this would be 213.17.139.234. Next check the **WAN** box and enter the unique combination ID you entered in the destination node. Then, click the **apply** button.

The screenshot shows the 'DSS DATA STORAGE SERVER' web interface. The 'CONFIGURATION' tab is active, and the 'volume manager' sub-tab is selected. On the left, under 'Vol. groups', 'vg00' is listed. Below it, the 'Vol. replication' option is highlighted. On the right, the 'Volume replication mode' section shows a table with columns: Logical Volume, Init, Source, Destination, and Clear metadata. The row for 'lv0000' shows 'done' in the Init column, and the 'Source' checkbox is checked. An arrow points from the 'Vol. replication' menu item to this table. Below this, the 'Mirror server IP' section has fields for 'IP address:' (213.17.139.234), 'WAN:' (checked), and 'ReplicationID:' (193WERacvQ). An arrow points from the 'Mirror Server IP' text box to this section. At the bottom, a message box states 'Mirror Server IP is not set.' and an 'Event Viewer' is visible at the very bottom.

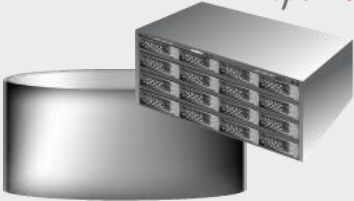
Logical Volume	Init	Source	Destination	Clear metadata
lv0000	done	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

NOTE:

The source and destination volumes must be of identical ReplicationID number.


Setting up Synchronous **Volume Replication** over a WAN *open-e*

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Data Server (DSS1)
Source node
Address IP:77.20.155.182

5. Creating replication task

Enter the task name in field **Task name** next, click on the  button.

Volume Replication



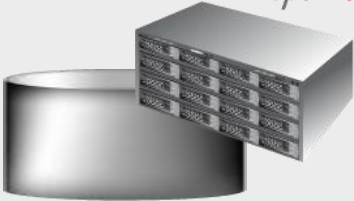
In the **Destination volume** field select the appropriate volume (in this example, **lv0000**), and click **create** to confirm.

The screenshot shows the 'DSS DATA STORAGE SERVER' web interface. The 'CONFIGURATION' tab is active, and the 'Vol. replication' sub-tab is selected. The 'ReplicationID' field is set to '193WERacvQ'. The 'Create new volume replication task' section is visible, with the following fields: 'Task name' (set to 'Replication_WAN'), 'Source volume' (set to 'lv0000'), 'Destination volume' (set to 'lv0000'), 'Bandwidth for SyncSource (MB)' (set to '40'), and 'Asynchronous protocol' (unchecked). The 'create' button is at the bottom right of this section. Below it is the 'Replication tasks manager' section, which shows an 'Info' message: 'No tasks have been found.' The 'Event Viewer' is at the bottom left, and the footer says 'Data Storage Server. All rights reserved.'

The configuration of the Source Node (storage server) is now complete.

Setting up Synchronous Volume Replication over a WAN *open-e*

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Data Server (DSS1)
Source node
Address IP:77.20.155.182

5. Creating replication task

After the DSS console has reloaded, you can start, stop or delete the task within the **Replication task manager** function.

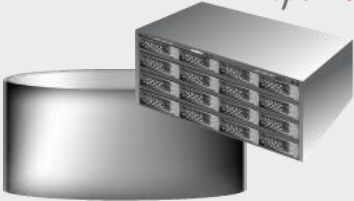
The screenshot shows the DSS console with the following components:

- Logout** button in the top left.
- DSS DATA STORAGE SERVER** header.
- Navigation tabs:** SETUP, CONFIGURATION (selected), MAINTENANCE, STATUS, HELP.
- Sub-navigation tabs:** volume manager (selected), NAS settings, NAS resources, iSCSI target manager, FC target manager.
- Left sidebar:**
 - Vol. groups:** Contains 'vg00'.
 - Vol. replication:** Contains 'Replication_WAN'.
- Main content area:**
 - WAN:** ☒ (checked).
 - ReplicationID:** 193WERacyQ.
 - apply** button.
 - Create new volume replication task** button.
 - Info** box: No volumes with replication functionality found or all volumes have a task assigned already.
 - Replication tasks manager** section:

Name	Start time	Action
Replication_WAN	n/a	
Source volume: lv0000		
Destination volume: lv0000		
Destination IP: 213.17.139.234		
Protocol type: Synchronous		

Setting up Synchronous **Volume Replication** over a WAN *open-e*

open-e



Data Server (DSS1)
Source node
Address IP:77.20.155.182

5. Creating replication task

Also, you can start, stop or delete the task within the **Replication Task Manager** function by clicking on the name replication (in this case, Replication WAN).

The screenshot shows the open-e Data Storage Server (DSS) web interface. The top navigation bar includes 'logout', 'DSS', 'DATA STORAGE SERVER', and the 'open-e' logo. Below this is a secondary navigation bar with tabs: 'SETUP', 'CONFIGURATION', 'MAINTENANCE', 'STATUS', and 'HELP'. A third bar contains 'volume manager', 'NAS settings', 'NAS resources', 'iSCSI target manager', and 'FC target manager'. The main content area is divided into two panels. The left panel, titled 'Vol. groups', shows a tree structure with 'vg00' expanded. Below it, 'Vol. replication' is shown with 'Replication_WAN' selected. The right panel, titled 'Replication tasks manager', displays a table with one task: 'Replication_WAN', which started on 2009-02-27 at 21:08:39. The task details show: Source volume: lv0000, Destination volume: lv0000, Destination IP: 213.17.139.234, and Protocol type: Synchronous. Below the table is a section 'Create schedule for volume replication task' with a comment field, checkboxes for days of the week (Monday through Sunday), and a section for frequency: 'Every week' (selected), 'Every even week', and 'Every odd week'. The frequency section also includes 'Start' and 'Stop' time selectors. At the bottom, there is an 'Event Viewer' field and a footer that reads 'Data Storage Server. All rights reserved'.

Name	Start time	Action
Replication_WAN	2009-02-27 21:08:39	[Start] [Stop] [Delete]

Source volume: lv0000
Destination volume: lv0000
Destination IP: 213.17.139.234
Protocol type: Synchronous

Create schedule for volume replication task

Comment:

☐ Monday ☐ Saturday
☐ Tuesday ☐ Sunday
☐ Wednesday
☐ Thursday
☐ Friday

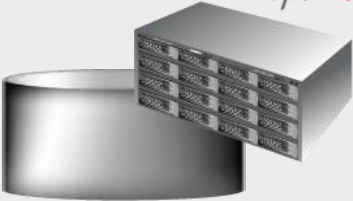
Start :
Stop :

☒ Every week
☐ Every even week
☐ Every odd week

NOTE:
Once the replication process has started, the replication direction cannot be changed.

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5. Creating replication task

In the “Create schedule for volume replication task” function, enter a comment for the new schedule and select for all days of the week. In this example choose **Every week** and select time for the start task (8 pm) and stop (7 am). Next, click the **apply** button.

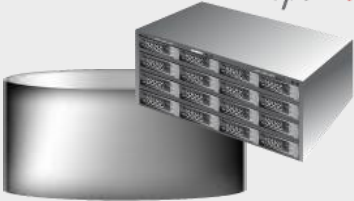
The screenshot shows the open-e DSS web interface. The top navigation bar includes 'logout', 'DSS', 'DATA STORAGE SERVER', and the open-e logo. Below this are tabs for 'SETUP', 'CONFIGURATION', 'MAINTENANCE', 'STATUS', and 'HELP'. Under 'CONFIGURATION', there are sub-tabs: 'volume manager', 'NAS settings', 'NAS resources', 'iSCSI target manager', and 'FC target manager'. The 'volume manager' tab is active, showing a tree view with 'Vol. groups' (containing 'vg00') and 'Vol. replication' (containing 'Replication_WAN'). A blue arrow points from the text box to the 'Create schedule for volume replication task' link. The configuration page for 'Replication_WAN' is displayed, showing a 'Volume replication task: Replication_WAN' header. Below this is a 'Create schedule for volume replication task' section with a 'Comment' field (containing 'EveryDayAt8PM'), checkboxes for days of the week (Monday through Sunday, all checked), a 'Start' time of 20:00 and a 'Stop' time of 07:00, and radio buttons for scheduling frequency (Every week, Every even week, Every odd week). An 'apply' button is at the bottom right. A 'Schedules for volume replication task' section at the bottom shows an 'Info' icon and the text 'No schedules found.' The footer of the interface reads 'Data Storage Server. All rights reserved.'

NOTE:

In case of bandwidth limitation you can start the Volume Replication over the WAN in scheduled function at night in order not to load the connection which can be used by other applications.

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Source node
Address IP:77.20.155.182

6. Check status of volume replication

Under the „**STATUS**“ tab, select „**tasks**“ and select **Volume Replication** to display information on existing volume replication tasks

The screenshot shows the open-e Data Storage Server (DSS) web interface. The top navigation bar includes tabs for SETUP, CONFIGURATION, MAINTENANCE, STATUS, and HELP. The STATUS tab is selected, and the left sidebar shows a tree view with 'tasks' selected. Under 'tasks', 'Volume Replication' is highlighted. The main content area displays 'Tasks: Volume Replication' and shows a table of running tasks.

Name	Type	Start time
Replication_WAN	Volume replication	2009-02-27 21:08:39

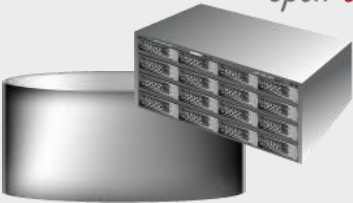
Below the running tasks table, there is a 'Tasks log' section with a table showing the history of tasks.

Time	Name	Type	Status	Action
2009-02-27 21:08:47	Replication_WAN	Volume replication	OK	Started

At the bottom of the interface, there is an 'Event Viewer' section and a footer that reads 'Data Storage Server. All rights reserved'.


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open-e



Data Server (DSS1)
Source node
Address IP: 77.20.155.182

6. Check status of volume replication

Click on  button with task name (in this case **Replication_WAN**) to display detailed information on the current replication task.

All possible connection types (from **Connection** field) are described in table:

State	Description
StandAlone	Indicates that volume replication has been disabled.
Unconnected	Mirror server is not connected.
WfConnection	Mirror server waits for a connection.
WfRepotParams	Displayed when connection to the mirror server is in progress.
Connected	Source and destination servers have been connected successfully.
Server's noLess	Error on the mirror server side.
Timeout, BrokenPipe, NetworkFailure	Displayed when servers cannot communicate successfully while connected.
WfBtMap(SLT)	Displayed when the volume replication starts.
SyncSource	Replication is in progress, the data is consistent.
SyncTarget	Replication is in progress, the data is inconsistent.

On the 30th slide.

The screenshot shows the DSS web interface with the following components:

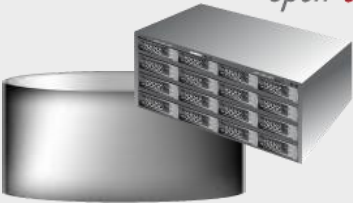
- Navigation Bar:** Includes tabs for SETUP, CONFIGURATION, MAINTENANCE, STATUS (selected), and HELP. Below these are sub-tabs for network, logical volume, connections, system, hardware, tasks (selected), and S.M.A.R.T.
- Tasks List:** A tree view on the left shows tasks including Backup, Restore from backup, Data Replication, Antivirus, **Volume Replication** (selected), and Snapshots.
- Running tasks:** A table showing the current task:

Name	Type	Start time
Replication_WAN	Volume replication	2009-02-27 21:08:39
- Task Details:**
 - Protocol type:** Synchronous
 - Connection:** SyncSource
 - Total size to replicate:** 10240 MB
 - Remain to replicate:** 10206 MB
 - Speed (avg):** 308 kB/s (192 kB/s)
 - Time left:** 7:15:29
 - Source info:**
 - Logical volume: lv0000
 - Consistency: Consistent
 - Destination info:**
 - Logical volume: lv0000
 - Consistency: **Inconsistent**
 - IP address: 213.17.139.234
- Tasks log:** A table showing the task's history:

Time	Name	Type	Status	Action
2009-02-27 21:08:47	Replication_WAN	Volume replication	OK	Started
- Event Viewer:** A field at the bottom left for viewing events.
- Footer:** "Data Storage Server. All rights reserved."

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Source node
Address IP:77.20.155.182

6. Check status of volume replication

The replication tasks shows consistency status of the destination volume. This will state **Inconsistent** immediately upon starting a new replication.

This will switch to **Consistent** once reaching the state that both volumes are in sync. Destination volume has useful data only when replication task reaches **Consistent** state.

Synchronous replication does not guarantee exact mirror of the data especially with slow uplink, but data remains consistent.

It could be that some of the most recent files are missing on destination volume. The amount of the not replicated data depends on the uplink speed and the amount of the new data on the source volume.

The screenshot shows the DSS (Data Storage Server) web interface. The top navigation bar includes 'logout', 'DSS', 'DATA STORAGE SERVER', and the 'open-e' logo. Below this is a secondary navigation bar with tabs: 'SETUP', 'CONFIGURATION', 'MAINTENANCE', 'STATUS' (selected), and 'HELP'. Under 'STATUS', there are sub-tabs: 'network', 'logical volume', 'connections', 'system', 'hardware', 'tasks' (selected), and 'S.M.A.R.T.'. The 'Tasks' section is active, showing a list of tasks on the left and details on the right. The task list includes 'Backup', 'Restore from backup', 'Data Replication', 'Antivirus', 'Volume Replication' (selected), and 'Snapshots'. The details for 'Volume Replication' show a task named 'Replication_WAN' of type 'Volume replication' starting at '2009-02-27 21:08:39'. Below this, the 'Running tasks' section shows a table with columns 'Name', 'Type', and 'Start time'. The table contains one entry: 'Replication_WAN' (Volume replication) starting at '2009-02-27 21:08:39'. Below the table, the 'Tasks log' section shows a table with columns 'Time', 'Name', 'Type', 'Status', and 'Action'. The table contains one entry: '2009-02-27 21:08:47' (Replication_WAN) (Volume replication) with status 'OK' and action 'Started'. A blue arrow points from the text 'Volume Replication' in the task list to the 'Replication_WAN' entry in the 'Running tasks' table.

Name	Type	Start time
Replication_WAN	Volume replication	2009-02-27 21:08:39

Time	Name	Type	Status	Action
2009-02-27 21:08:47	Replication_WAN	Volume replication	OK	Started

Volume Replication, between source and destination nodes, is now complete.

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CONNECTION STATES:

State	Description
StandAlone	Indicates that volume replication has been disabled.
Unconnected	Mirror server is not connected.
WFConnection	Mirror server waits for a connection.
WFReportParams	Displayed when connection to the mirror server is in progress.
Connected	Source and destination servers have been connected successfully.
ServerForDLess	Error on the mirror server side.
Timeout, BrokenPipe, NetworkFailure	Displayed when servers cannot communicate successfully while connected
WFBitMap{S,T}	Displayed when the volume replication starts.
SyncSource	Replication is in progress, the data is consistent.
SyncTarget	Replication in progress, the data is inconsistent.

Thank You!